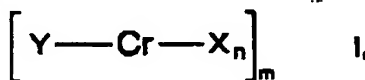


We claim:

1. A copolymer of ethylene with C₃-C₁₂ α-olefins, which has a polydispersity Mw/Mn of ≤ 10, a density of from 0.85 to 0.95 g/cm³, a proportion of from 1 to 40% by weight of comonomer and a molar mass Mn above 150,000 g/mol and a comonomer composition distribution breadth index above 70%.
2. A copolymer of ethylene with C₃-C₁₂ α-olefins as claimed in claim 1, whose density is from 0.88 to 0.93 g/cm³.
3. A copolymer of ethylene with C₃-C₁₂ α-olefins as claimed in claim 1 or 2, which has a comonomer composition distribution breadth index above 90%.
4. A copolymer of ethylene with C₃-C₁₂ α-olefins as claimed in any of claims 1 to 3, wherein the α-olefins used have been selected from the group consisting of propene, 1-butene, 1-hexene and 1-octene.
5. A copolymer of ethylene with C₃-C₁₂ α-olefins as claimed in any of claims 1 to 4, whose polydispersity Mw/Mn is from 2 to 4.
6. A copolymer of ethylene with C₃-C₁₂ α-olefins as claimed in any of claims 1 to 5, whose molecular weight Mn is above 200,000 g/mol.
7. A process for preparing ethylene copolymers as claimed in any of claims 1 to 6, which comprises carrying out the process in the presence of the following components:

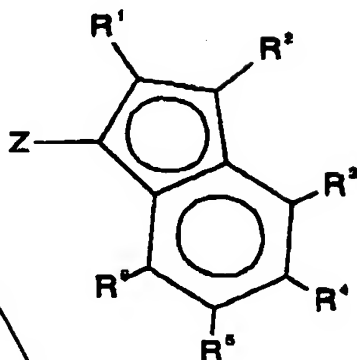
(A) Substituted monoindenyl- or monofluorenylchromium complexes of the formula I



where:

Y has the following formula II

2



II

where

Z is an unsubstituted, substituted or condensed heteroaromatic ring system,

X, independently of one another, are fluorine, chlorine, bromine, iodine, hydrogen, C₁-C₁₀-alkyl, C₂-C₁₀-alkenyl, C₆-C₂₀-aryl, alkylaryl having from 1-10 carbon atoms in the alkyl radical and from 6-20 carbon atoms in the aryl radical, NR⁷R⁸, OR⁷, SR⁷, SO₃R⁷, OC(O)R⁷, CN, SCN, β-diketonate, CO, BF₄⁻, PF₆⁻, or bulky noncoordinating anions,

R¹-R⁸, independently of one another, are hydrogen, C₁-C₂₀-alkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl radical and from 6-20 carbon atoms in the aryl radical, SiR⁹₃, where the organic radicals R¹-R⁸ may also have halogen substitution and any two geminal or vicinal radicals R¹-R⁸ may also have been bonded to give a 5- or 6-membered aromatic or aliphatic ring,

R⁹, independently of one another, are hydrogen, C₁-C₂₀-alkyl, C₂-C₂₀-alkenyl, C₆-C₂₀-aryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl radical and from 6-20 carbon atoms in the aryl radical, and where the two geminal radicals R⁹ may also have been bonded to give a five- or six-membered ring,

n is 1, 2 or 3, and

m is 1, 2 or 3,

and

3

(B) if desired, one or more activator compounds.

8. A process for preparing ethylene copolymers as claimed in claim 7, wherein Z in component (A) is an unsubstituted or substituted 8-(quinolyl) system and $R^1 - R^6$ are hydrogen.
9. A process as claimed in claim 7 or 8, wherein the activator compound (B) used comprises a compound selected from the group consisting of aluminoxane, dimethylanilinium tetrakis(pentafluorophenyl)borate, trityl tetrakis(pentafluorophenyl)borate and tris(pentafluorophenyl)borane.
10. A polymer mixture which comprises at least one copolymer of ethylene with C_3-C_{12} α -olefins as claimed in any of claims 1 to 6.
11. The use of copolymers of ethylene with C_3-C_{12} α -olefins as claimed in any of claims 1 to 6 for producing fibers, films or moldings.
12. A fiber, a film or a molding which comprises the copolymers of ethylene with C_3-C_{12} α -olefins as claimed in any of claims 1 to 6 as a substantial component.

Adol AI